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ABSTRACT

The widespread implementation of search protocols, primarily Z39.50, in combination with the spread of the World Wide Web makes possible a high degree of integration and standardization of search services. This paper describes a project which seeks to combine in a seamless fashion the searching of periodical indexes and library OPACs with document requesting for patrons of a consortium of academic libraries in western Canada. Participating institutions in the Council of Prairie and Pacific University Libraries (COPPUL) include: Universities of Athabasca, Alberta, British Columbia, Calgary, Saskatchewan, Simon Fraser University, Victoria, Manitoba, Winnipeg, and Lethbridge. A program was developed which allows the user to query various full text sources or to place interlibrary loan requests from within the Web-based search session. The document addresses a number of issues, including: patron authentication, querying on Z39.50 compatible databases, supporting differing library configurations within a consortium, user interface design issues, and problems surrounding holdings statements. Procedural diagrams are included. (Author/SWC)

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The Universe at Your Fingertips: Continuing Web Education
April 25, 1997 University Center University of California, Santa Barbara

ED 412 896

The Western Canada Virtual Union Catalogue: Integrating Document Requesting into Z39.50 and Other Search Clients

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Abstract

The widespread implementation of search protocols, primarily Z39.50, in combination with the spread of the Web makes possible a high degree of integration and standardization of search services. This paper describes a project which seeks to combine in a seamless fashion the searching of periodical indexes and library OPACs with document requesting. We have written a program which allows the user to query various full text sources to or place interlibrary loan requests from within the Web-based search session. A number of issues are addressed including: patron authentification, querying on-Z39.50 compatible databases, supporting differing library configurations within a consortium, user interface design issues and problems surrounding holdings statements.

Summary

This paper describes a project now in its beginning stages which is designed to offer user initiated document delivery, including access as far as possible to full text resources, to patrons of a consortium of academic libraries in western Canada. The project has several specific goals:

1. Document requesting, and ultimately display, is **integrated** into familiar search tools: periodical indexes and Z39.50 clients. It should not require the user to log into a separate system to determine where the desired item is held, and to acquire it.
2. It is **Web based**, which gives it a familiar look and feel, and makes it easy to distribute-nothing beyond the web browser need be loaded at the user's workstation-and it is easy to connect to various search engines. It is currently running with SilverPlatter Webspirs and a prototype custom Z39.50

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client.

3. It is **flexible** in its use of different holdings (Z39.50, union lists) and full text sources, as well as interfacing with various Interlibrary Loan management packages. Currently it generates AVISO and CISTI formatted requests, and connections to RELAIS, and ISO protocol based systems are planned.
4. It offers extensive **local configuration** options for each participating library.

Deep Background

The past three years have seen an unprecedented, though long predicted, reshaping of the library computing landscape. In 1994 a standard academic library configuration saw the library OPAC and processing systems, CD-ROM-based periodical indexes, tape loaded periodical indexes, and resource sharing tools--OCLC, RLIN, and other union lists-living in proud separation, each with its own proprietary interface, and its own terminal. The Internet was used primarily for e-mail between librarians, and for connecting to remote OPACs, OCLC and RLIN and other resources. Since then several important non-proprietary computer protocols have been widely implemented:

1. **TCP/IP**, the Internet.
2. The **Web protocols**, which provide a similar and familiar look and feel, are easily and cheaply distributed, and thanks to CGI and the MIME based browser plugins are very open in terms of linking to a variety of applications.
3. **Z39.50**, which allows the transfer of search and bibliographic information between dissimilar systems.
4. Graphics standards and the **ARIEL** document transmission format.

Widespread use of these and other software have created an increasingly sophisticated, and consequently demanding, community of users, and of librarians, and an increasingly complex working environment for the systems librarian.

In addition **full text document** delivery vendors are beginning to come on stream. While these show great promise, they have two major drawbacks: they return library users to separate proprietary interfaces to find the document they're after; and they reduce the likelihood that users will turn to interlibrary loan to satisfy document requests. In effect libraries would be reacquiring an item that is held in the consortium by requesting it from a full text vendor. One of the goals of our project is to place full text sources on the same screen as library holdings.

COPPUL and Simon Fraser University

The Virtual Western Canada University Library is a collaborative project among **COPPUL** (Council of Prairie and Pacific University Libraries: Universities of Athabasca, Alberta, British Columbia, Calgary, Saskatchewan, Simon Fraser University, Victoria, Manitoba, Winnipeg, Lethbridge). It is funded by grants from each of the participating universities. Most of the programming in the current phase of the project is being done by systems staff at Simon Fraser University, building on a consortium based document requesting project previously done there, the OJAC (Online Journal Access Citation) project. As with OJAC, the union list was co-ordinated by the Electronic Library Network in British Columbia, and the database produced by Autographics. The development is scheduled to take place in two phases (the specifics will no doubt change as work progresses):

Phase I

1. Complete pre-matched union list of serials (see below) for consortium libraries, including CISTI

holdings (if available)
2. Use Z39.50 or other means to get current holdings and full holdings statements from OPACs (can link to III bib record now, but needs link to item record to see latest issue received, etc).
3. Use Z39.50 and other means to link to full text resources (can do UMI Powerpages now).
4. Complete the Webspirs interface so it works with a variety of databases; assess linking holdings module with Ovid Z39.50 interface (looks like it will require working with Ovid).
5. Build a Z39.50 client for broadcast and monograph searching (in prototype).
6. Build links to RELAIS and other ILL systems.
7. Produce a log file for statistical purposes.

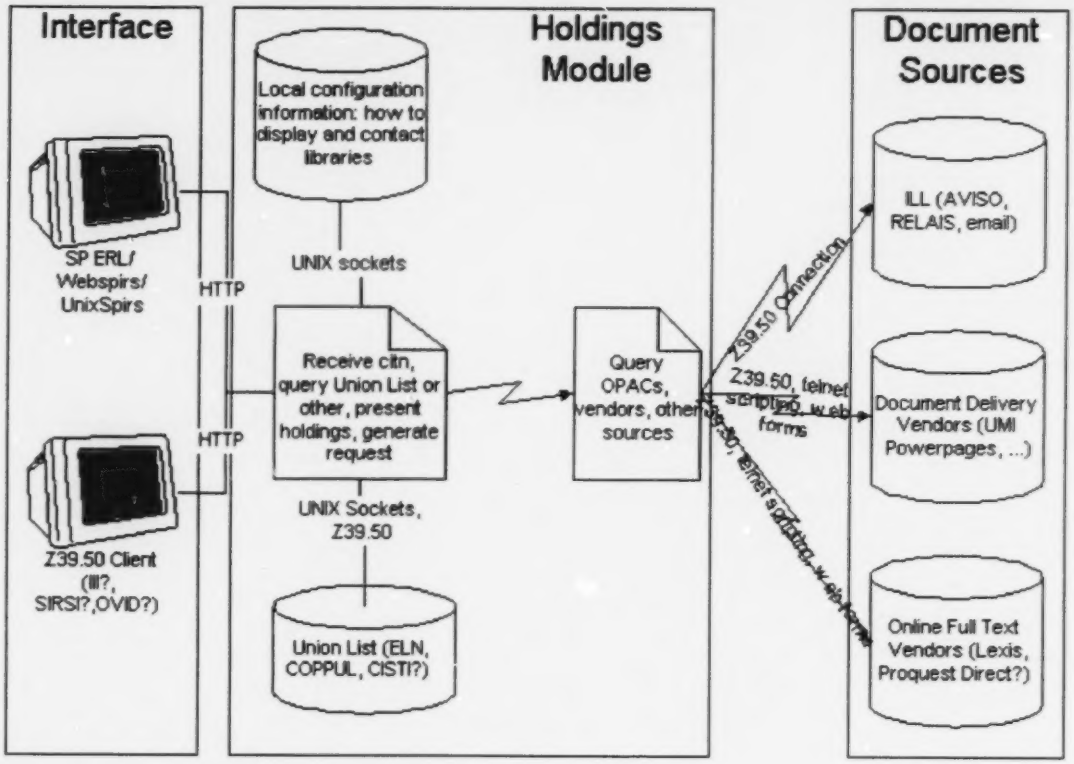
Phase II

1. Address user authentification issues (done already for some sites).
2. Consider means of requesting monographs, probably using Z39.50 and the ISO 10161 ILL protocol.
3. Extend full text resources, as vendors permit.
4. Enhance integration with local ILL systems, so users may check the current status of their requests, etc.

A full prototype of the initial phase of the project is to be complete by mid-June, 1997.

System Overview

The holdings module is designed to provide the user with a 'single session' approach to document retrieval: the user authenticates herself, searches the appropriate index for the subject area, identifies documents, and requests or displays them, all as part of the same process. The structure of the system is laid out in the first figure, with further steps illustrated with screen shots.


Interface
Holdings Module
Document Sources
Local configuration information: how to display and contact libraries
SP ERL/ Webspirs/ UnixSpirs
HTTP
UNIX sockets
Receive citn, query Union List or other, present holdings, generate request
Query OPACs, vendors, other sources
Z39.50 Connection
ILL (AVISO, RELAIS, email)
Z39.50, telnet scripting, web forms
Document Delivery Vendors (UMI Powerpages, ...)
HTTP
Z39.50 Client (III?, SIRSI?,OVID?)
UNIX Sockets, Z39.50
Union List (ELN, COPPUL, CISTI?)
Online Full Text Vendors (Lexis, Proquest Direct?)

The Single Session

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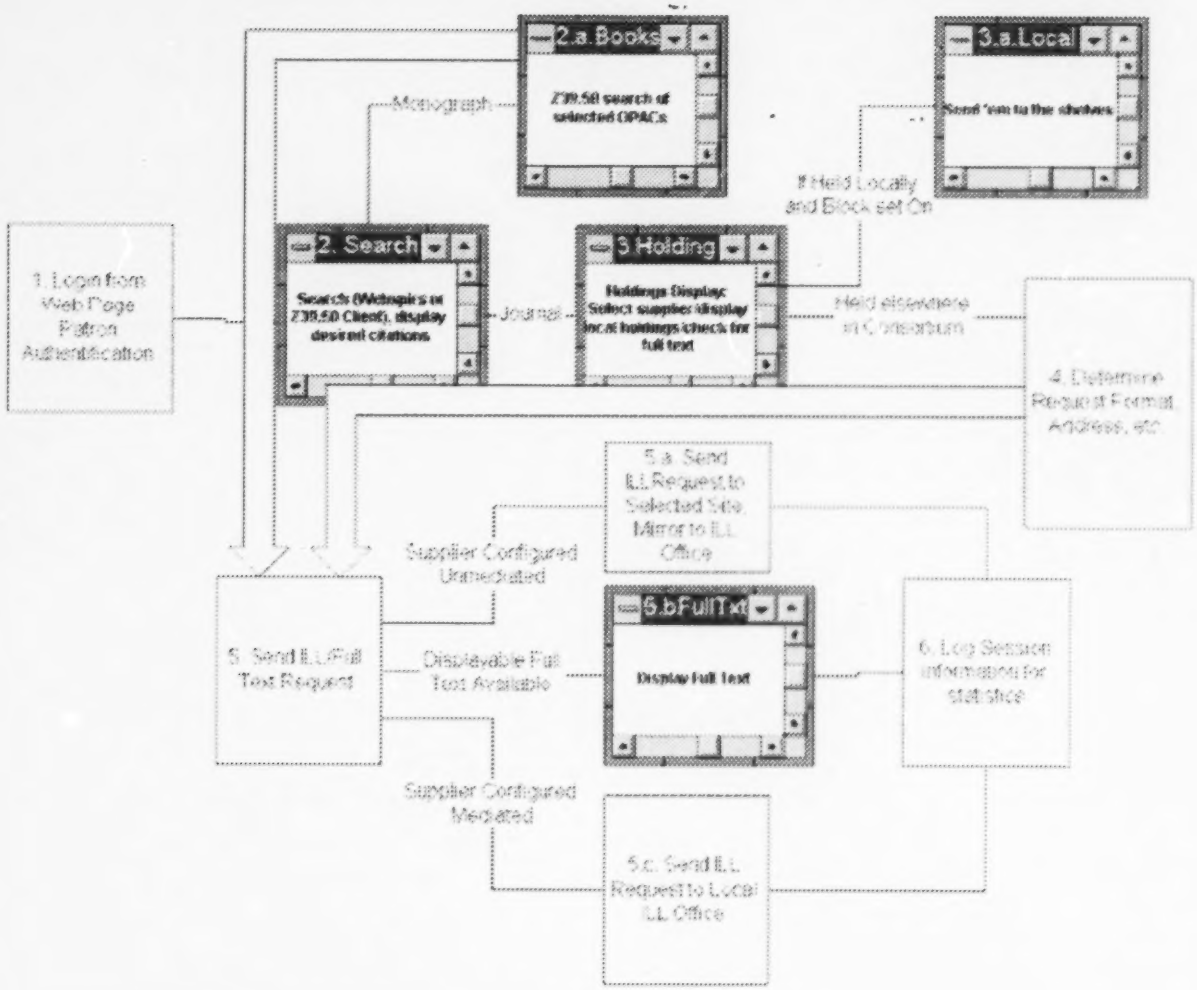
2.a.Books
Z39.50 search of selected OPACs
Monograph
3.a.Local
If Held Locally and Block set On
1. Login from Web Page Patron Authentication
2. Search
Journal
3 Holding
Holdings Display: Select supplier, display local holdings, check for full text
Held elsewhere in Consortium
4. Determine Request Format, Address, etc
5.a Send ILL Request to Selected Site, Mirror to ILL Office
Supplier Configured Unmediated
5. Send ILL/Full Text Request
5.bFullTxt
Displayable Full Text Available
Display Full Text
6. Log Session information for statistics
Supplier Configured Mediated
5.c. Send ILL Request to Local ILL Office

1. **Web browser connects to search tool; user is authenticated**

   1. Validation is currently done by originating IP address. At SFU, user specific authentification is working, using a link to campus computing's user database from our Apache Web server. How this is to be extended to consortium libraries has yet to be worked out (see below).

2. **User Searches and Displays Desired Records**

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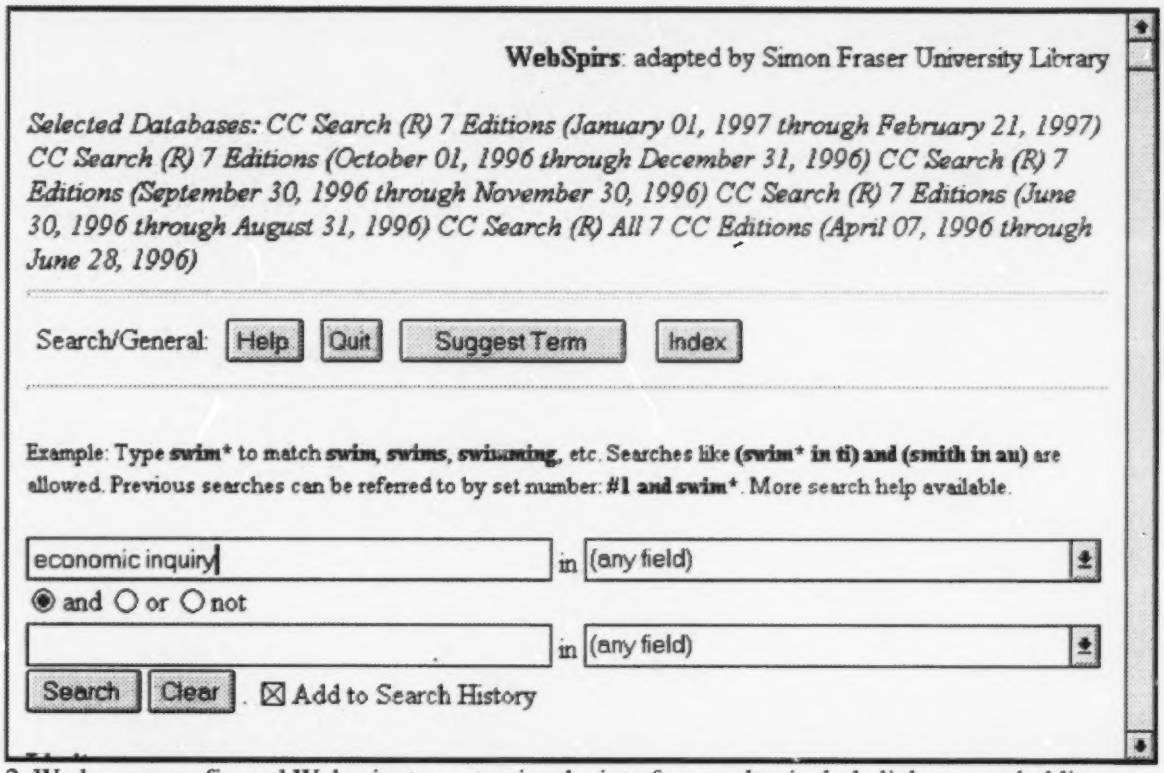
WebSpirs: adapted by Simon Fraser University Library
Selected Databases: CC Search (R) 7 Editions (January 01, 1997 through February 21, 1997) CC Search (R) 7 Editions (October 01, 1996 through December 31, 1996) CC Search (R) 7 Editions (September 30, 1996 through November 30, 1996) CC Search (R) 7 Editions (June 30, 1996 through August 31, 1996) CC Search (R) All 7 CC Editions (April 07, 1996 through June 28, 1996)
Search/General:
Help
Quit
Suggest Term
Index
Example: Type swim* to match swim, swims, swimming, etc. Searches like (swim* in ti) and (smith in au) are allowed. Previous searches can be referred to by set number: #1 and swim*. More search help available.
economic inquiry
in
(any field)
and or not
in
(any field)
Search
Clear
Add to Search History

2. We have reconfigured Webspirs to customize the interface, and to include links to our holdings routine. A Z39.50 client will be used to access other databases. We have it running in prototype, using a customized version of the Stanford Gateway, a Z39.50 client and library of Perl routines developed by Harold Finkbeiner. We hope to be able to integrate the holdings button into other Z39.50 clients.
3. **User Displays Consortium Holdings Table**

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BVAS custom TABLE message

Journal: ECONOMIC-INQUIRY
Title: ALTRUISM, MATCHING, AND NONMARKET INSURANCE

Check Availability	Check for availablity of fulltext.
Simon Fraser University (Burnaby)	**(LOOK FOR: article vol/issue: 34 (4), year: 1996)** v.12- ; 1974- LOCATION: current issues in PERRM; bound issues in PERIOD. SHELVED UNDER: Title. Library also has: 1982- LOCATION: INFTRC. Recent Holdings (Bennett and Belzberg)
Simon Fraser University (Downtown)	**(LOOK FOR: article vol/issue: 34 (4), year: 1996)** Library also has: 1982- LOCATION: INFTRC.
College of New Caledonia	**(LOOK FOR: article vol/issue: 34 (4), year: 1996)** HB 1 .W47 PERIODICALS Mar.1974-Apr.1987
University College of the Cariboo	**(LOOK FOR: article vol/issue: 34 (4), year: 1996)** infob 1982-
	(LOOK FOR: article vol/issue: 34 (4), year: 1996)

3. User clicks on a Holdings button from the full record display. The sequence in which the holdings are displayed, as well as whether items can be requested directly from other institutions and whether requesting is allowed at all if the item shows as held locally, are all configurable for each site.
4. **Use Z39.50 connection to check OPAC for current holdings**

Z39.50 Search Results -

Home | Catalogue | Feedback | Index | Print/email | ? Help

Holdings Information Direct from SFU Catalog (includes both Bennett and Belzberg)

Title: Economic inquiry. --
BVAS v.12- ; 1974- LOCATION: current issues in PERRM; bound issues in PERIOD.
SHELVED UNDER: Title.
Library also has: 1982- LOCATION: INFTRC.
BVAS v.12- ; 1974-

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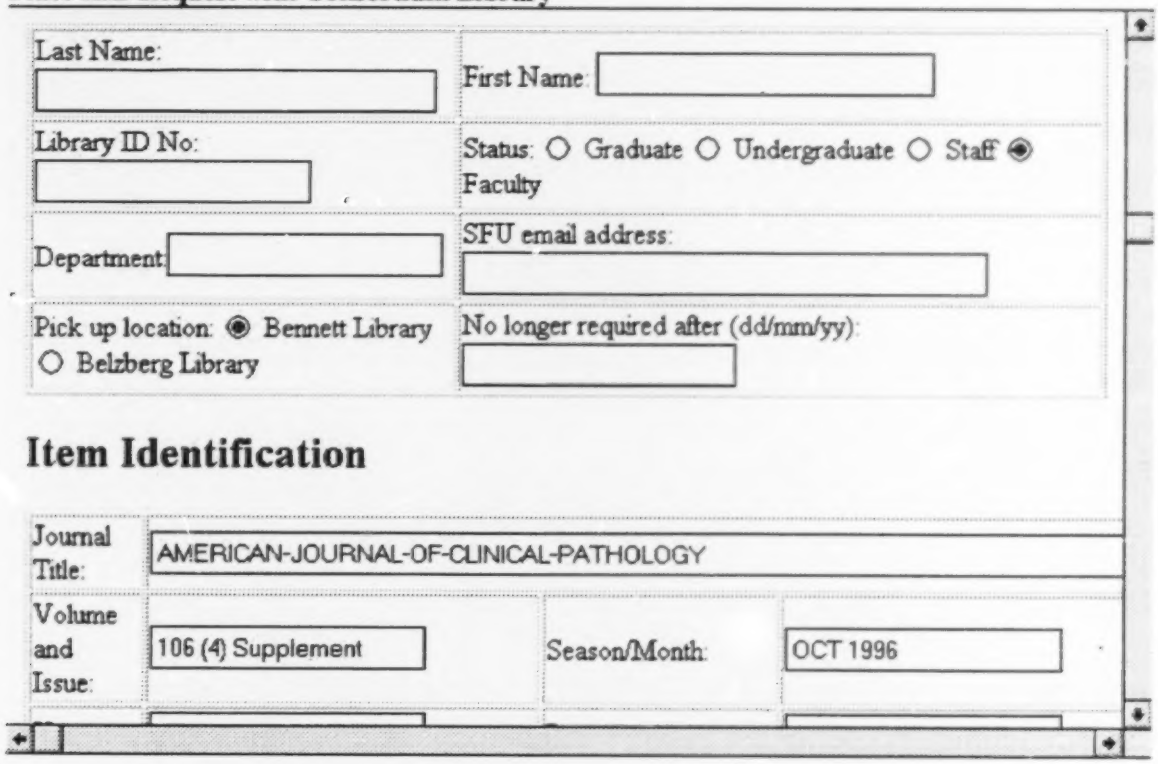
4. If the item is held locally ('locally' in this example means held at SFU) the user can initiate a Z39.50 connection to our III catalogue to check the current holdings of the item. This is because the holdings may have changed since they were submitted to the union list. We would like to be able to link to the check-in record here.
5. **Place ILL Request with Consortium Library**



Last Name: First Name:

Library ID No: Status: ○ Graduate ○ Undergraduate ○ Staff ◉ Faculty

Department: SFU email address:

Pick up location: ◉ Bennett Library ○ Belzberg Library No longer required after (dd/mm/yy):

Item Identification

Journal Title:	AMERICAN-JOURNAL-OF-CLINICAL-PATHOLOGY		
Volume and Issue:	106 (4) Supplement	Season/Month:	OCT 1996

5. Information is extracted from the SilverPlatter or Z39.50 record and placed in an ILL form. The user enters their information, the library is looked up in the configuration file to determine how to contact it, and a message requesting the item is sent, either to the supplying library or to our own ILL office. User information is retained from request to request in a server-side cookie so it need not be entered for each request. A message is generated to the user confirming that the request has been placed.
6. **Check for Full Text**

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EFFECTIVE NOV. 1, 1995, $0.10 PER PAGE IS CHARGED FOR ARTICLES.

Article(s) to be picked up at the SFU-Burnaby Check-out Counter.
Name (Last, First):
Barcode Number: 2 9345
Special Notes:

Select <REQUEST ARTICLE(S)> to send your request(s).
To print only part of article(s) change START/END page fields.

START END #PAGES

*** MAXIMUM ARTICLES PER REQUEST ***

6. The user may check to see if the article is included in our UMI Powerpages. Other full text sources will be added.
7. **If no Consortium Holdings, generate request to go to local ILL office** 7. If no holdings are found within the consortium or our full text sources, the user may place a blind ILL request for the item with our ILL office.
8. **Log Session Information for Stats**

8. Information about the search is logged for statistical purposes.

Issues, Problems and Limitations

1. **User Authentification** We need to ensure that access to databases and document requesting/display is restricted to people affiliated with the participating institutions (the issues surrounding user authentification have been well laid out by CIC). So far we have built an authentification process that works on originating IP address, which covers most situations. However we find many students have their own Internet Service Providers, and other members of the community want access while on sabbatical or traveling. To address these issues at SFU we have a connection between our Apache Web server and the campus computing user file using the NIS protocol, so if a user fails on IP address we can let them authenticate themselves using their campus computing ID. Some COPPUL sites are working with Kerberos, and others (notably the University of Saskatchewan) are developing more sophisticated user validation procedures. A consortium-wide process for authentification has yet to be worked out. And indeed single process may prove unnecessary.
2. **Union List problems**

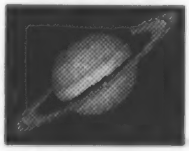
The union list on which our holdings statements are based is derived from the summary holdings statements in the catalogs of the participating institutions, and consequently there is a lot of variation in how the holdings information is presented. There are as well many wrongly entered or missing

ISSNs, duplicate entries, variant titles and other problems that make automated access to the holdings list difficult. We do extensive clean-up on the combined holdings file before submitting it to Autographics for processing, but the matching algorithm, while it deals with many problems, needs refinement.

The alternative approach to a union list which has been considered is direct Z39.50 access to the OPACs of the participating libraries. While this would offer more up to date holdings information, the problem of making a coherent display from such disparate holdings formats is formidable.

3. **Issue identification problems**
   One of the thorniest problems is the identification of holdings at the issue level. Ideally we would be able to determine whether a library held the particular issue of a journal which contains the desired document. There are two barriers to this: it is difficult to derive the issue information consistently from all the databases we want to search, and because the holdings information in the union list is inconsistent it is very hard to check it. This is why we display holdings statements for the user to select from, rather than have the system make that determination. This problem again arises in querying full text suppliers for a particular document. The SICI (Serial Item and Contribution Identifier) standard is under development which, if widely implemented, would greatly ease this process.
4. **Z39.50 problems**
   While Z39.50 is a very powerful tool, there are unfortunately many variations in how it has been implemented. Consequently some sites do not offer Z39.50 access to particular indexes (ISSN, ISBN) and functions (holdings display) that our project requires. To fully utilize the Z39.50 we await further refinement of the standard, and of the implementations offered by the various vendors.
5. **Integration with local ILL modules/ILS issues**
   Many participating sites are moving towards ILL systems which are modules of their Integrated Library Systems. This offers many advantages: for example ILL items can be circulated and charges tracked like any other library transaction. Currently it is difficult or impossible to add ILL transactions to these systems in a batch or automated way. As vendors implement the ISO 10161 Interlibrary Loan Protocol we will have a single, standard means of passing ILL requests to bibliographic utilities (OCLC has announced they will offer the standard this spring) and to various ILS's.
6. **Access to full text vendors**
   We have hopes of linking to a range of full text vendors. However it seems that the mechanism for looking up particular articles is extremely vendor-specific, and will present numerous challenges.

For further information: **http://www.lib.sfu.ca/holdings** [Link revised 9/2/97 by ald]



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